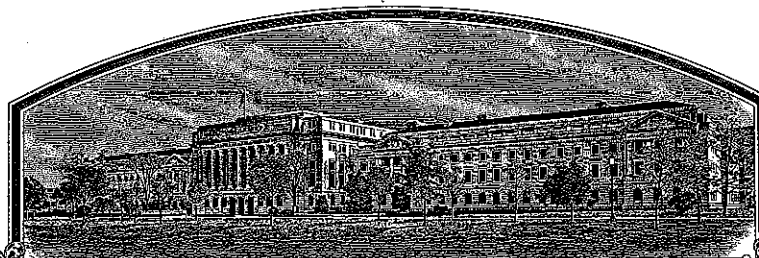


No.

200300276



THE UNITED STATES OF AMERICA

TO ALL TO WHOM THESE PRESENTS SHALL COME:

Texas Tech University

Whereas, THERE HAS BEEN PRESENTED TO THE

Secretary of Agriculture

AN APPLICATION REQUESTING A CERTIFICATE OF PROTECTION FOR AN ALLEGED DISTINCT VARIETY OF SEXUALLY REPRODUCED, OR TUBER PROPAGATED PLANT, THE NAME AND DESCRIPTION OF WHICH ARE CONTAINED IN THE APPLICATION AND EXHIBITS, A COPY OF WHICH IS HEREUNTO ANNEXED AND MADE A PART HEREOF, AND THE VARIOUS REQUIREMENTS OF LAW IN SUCH CASES MADE AND PROVIDED HAVE BEEN COMPLIED WITH, AND THE TITLE HERETO IS, FROM THE RECORDS OF THE PLANT VARIETY PROTECTION OFFICE, IN THE APPLICANT(S) INDICATED IN THE SAID COPY, AND WHEREAS, UPON DUE EXAMINATION MADE, THE SAID APPLICANT(S) IS (ARE) ADJUDGED TO BE ENTITLED TO A CERTIFICATE OF PLANT VARIETY PROTECTION UNDER THE LAW.

NOW, THEREFORE, THIS CERTIFICATE OF PLANT VARIETY PROTECTION IS TO GRANT UNTO THE SAID APPLICANT(S) AND THE SUCCESSORS, HEIRS OR ASSIGNS OF THE SAID APPLICANT(S) FOR THE TERM OF TWENTY YEARS FROM THE DATE OF THIS GRANT, SUBJECT TO THE PAYMENT OF THE REQUIRED FEES AND PERIODIC REPLENISHMENT OF VIABLE BASIC SEED OF THE VARIETY IN A PUBLIC REPOSITORY AS PROVIDED BY LAW, THE RIGHT TO EXCLUDE OTHERS FROM SELLING THE VARIETY, OR OFFERING IT FOR SALE, OR REPRODUCING IT, OR IMPORTING IT, OR EXPORTING IT, OR CONDITIONING IT FOR PROPAGATION, OR STOCKING IT FOR ANY OF THE ABOVE PURPOSES, OR CONDITIONING IT FOR PROPAGATION, OR STOCKING IT FOR ANY OF THE ABOVE PURPOSES, OR USING IT IN PRODUCING A HYBRID OR DIFFERENT VARIETY THEREFROM, TO THE EXTENT PROVIDED IN THE PLANT VARIETY PROTECTION ACT. (84 STAT. 1542, AS AMENDED, 7 U.S.C. 2321 ET SEQ.)

DAISY, BLACKFOOT

'Raider White'

In Testimony Whereof, I have hereunto set my hand and caused the seal of the Plant Variety Protection Office to be affixed at the City of Washington, D.C. this sixth day of September, in the year two thousand and six.

Attest:

Commissioner
Plant Variety Protection Office
Agricultural Marketing Service

Secretary of Agriculture

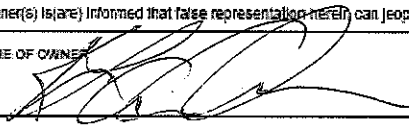


U.S. DEPARTMENT OF AGRICULTURE
AGRICULTURAL MARKETING SERVICE
SCIENCE AND TECHNOLOGY - PLANT VARIETY PROTECTION OFFICE

APPLICATION FOR PLANT VARIETY PROTECTION CERTIFICATE
(Instructions and information collection burden statement on reverse)

The following statements are made in accordance with the Privacy Act of 1974 (5 U.S.C. 552a) and the Paperwork Reduction Act (PRA) of 1995.

Application is required in order to determine if a plant variety protection certificate is to be issued (7 U.S.C. 2421). Information is held confidential until certificate is issued (7 U.S.C. 2420).

1. NAME OF OWNER Texas Tech University		2. TEMPORARY DESIGNATION OR EXPERIMENTAL NAME TTU T19		3. VARIETY NAME Raider White Plains	
4. ADDRESS (Street and No., or R.F.D. No., City, State, and ZIP Code, and Country) Director of Technology Transfer, Box 42007 Texas Tech University Lubbock, TX 79409-2007		5. TELEPHONE (Include area code) 806-742-4105		FOR OFFICIAL USE ONLY PVPO NUMBER 200300276 FILING DATE June 23, 2003	
		6. FAX (Include area code) 806-742-4103			
7. IF THE OWNER NAMED IS NOT A "PERSON", GIVE FORM OF ORGANIZATION (corporation, partnership, association, etc.) Public University		8. IF INCORPORATED, GIVE STATE OF INCORPORATION		9. DATE OF INCORPORATION	
10. NAME AND ADDRESS OF OWNER REPRESENTATIVE(S) TO SERVE IN THIS APPLICATION. (First person listed will receive all papers) Dr. Cynthia B. McKenney Department of Plant and Soil Science Box 42122 Texas Tech University Lubbock, TX 79409-2122				FILING AND EXAMINATION FEES: \$3652.00 DATE 6/23/03 CERTIFICATION FEE: \$358 + 410 DATE 6/23/03 + 7/3/06	
11. TELEPHONE (Include area code) 972-952-9285		12. FAX (Include area code) 972-952-9216		13. E-MAIL c-mckenney@tamu.edu	
14. CROP KIND (Common Name) Blackfoot Daisv		15. FAMILY NAME (Botanical) Asteraceae		16. IS THE VARIETY A FIRST GENERATION HYBRID? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO	
17. GENUS AND SPECIES NAME OF CROP <u>Melampodium leucanthum</u> (Torr. & A. Gray)		18. CHECK APPROPRIATE BOX FOR EACH ATTACHMENT SUBMITTED (Follow instructions on reverse) a. <input checked="" type="checkbox"/> Exhibit A. Origin and Breeding History of the Variety b. <input checked="" type="checkbox"/> Exhibit B. Statement of Distinctness c. <input checked="" type="checkbox"/> Exhibit C. Objective Description of Variety d. <input checked="" type="checkbox"/> Exhibit D. Additional Description of the Variety (Optional) e. <input checked="" type="checkbox"/> Exhibit E. Statement of the Basis of the Owner's Ownership f. <input checked="" type="checkbox"/> Voucher Sample (2,500 viable untreated seeds or, for tuber propagated varieties, verification that tissue culture will be deposited and maintained in an approved public repository) g. <input checked="" type="checkbox"/> Filing and Examination Fee (\$3,652), made payable to "Treasurer of the United States" (Mail to the Plant Variety Protection Office)		19. DOES THE OWNER SPECIFY THAT SEED OF THIS VARIETY BE SOLD AS A CLASS OF CERTIFIED SEED? See Section 63(a) of the Plant Variety Protection Act. <input type="checkbox"/> YES (If "yes", answer items 20 and 21 below) <input checked="" type="checkbox"/> NO (If "no", go to item 22)	
20. DOES THE OWNER SPECIFY THAT SEED OF THIS VARIETY BE LIMITED AS TO NUMBER OF CLASSES? IF YES, WHICH CLASSES? <input type="checkbox"/> FOUNDATION <input type="checkbox"/> REGISTERED <input type="checkbox"/> CERTIFIED		21. DOES THE OWNER SPECIFY THAT SEED OF THIS VARIETY BE LIMITED AS TO NUMBER OF GENERATIONS? IF YES, SPECIFY THE NUMBER 1,2,3, etc. FOR EACH CLASS. <input type="checkbox"/> FOUNDATION <input type="checkbox"/> REGISTERED <input type="checkbox"/> CERTIFIED (If additional explanation is necessary, please use the space indicated on the reverse.)		22. HAS THE VARIETY (INCLUDING ANY HARVESTED MATERIAL) OR A HYBRID PRODUCED FROM THIS VARIETY BEEN SOLD, DISPOSED OF, TRANSFERRED, OR USED IN THE U.S. OR OTHER COUNTRIES? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO IF YES, YOU MUST PROVIDE THE DATE OF FIRST SALE, DISPOSITION, TRANSFER, OR USE FOR EACH COUNTRY AND THE CIRCUMSTANCES. (Please use space indicated on reverse.)	
23. IS THE VARIETY OR ANY COMPONENT OF THE VARIETY PROTECTED BY INTELLECTUAL PROPERTY RIGHT (PLANT BREEDER'S RIGHT OR PATENT)? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO IF YES, PLEASE GIVE COUNTRY, DATE OF FILING OR ASSUANCE AND ASSIGNED REFERENCE NUMBER. (Please use space indicated on reverse.)		24. The owners declare that a viable sample of basic seed of the variety has been furnished with application and will be replenished upon request in accordance with such regulations as may be applicable, or for a tuber propagated variety a tissue culture will be deposited in a public repository and maintained for the duration of the certificate. The undersigned owner(s) is(are) the owner of this sexually reproduced or tuber propagated plant variety, and believe(s) that the variety is new, distinct, uniform, and stable as required in Section 42, and is entitled to protection under the provisions of Section 42 of the Plant Variety Protection Act. Owner(s) is(are) informed that false representation hereon can jeopardize protection and result in penalties.			
SIGNATURE OF OWNER 		SIGNATURE OF OWNER			
NAME (Please print or type) Texas Tech University by Lance Anderson		NAME (Please print or type)			
CAPACITY OR TITLE Director of TT and IP		DATE 9-28-04		CAPACITY OR TITLE DATE	

9/28/04
1/20/06
JMS

GENERAL: To be effectively filed with the Plant Variety Protection Office (PVPO), ALL of the following items must be received in the PVPO: (1) Completed application form signed by the owner; (2) completed exhibits A, B, C, E; (3) for a seed reproduced variety at least 2,500 viable untreated seeds, for a hybrid variety at least 2,500 untreated seeds of each line necessary to reproduce the variety, or for tuber reproduced varieties verification that a viable (in the sense that it will reproduce an entire plant) tissue culture will be deposited and maintained in an approved public repository; (4) check drawn on a U.S. bank for \$3,652 (\$432 filing fee and \$3,220 examination fee), payable to "Treasurer of the United States" (See Section 97.6 of the Regulations and Rules of Practice.) Partial applications will be held in the PVPO for not more than 90 days, then returned to the applicant as unfilled. Mail application and other requirements to Plant Variety Protection Office, AMS, USDA, Room 401, NAL Building, 10301 Baltimore Avenue, Beltsville, MD 20705-2351. **Retain one copy for your files.** All items on the face of the application are self explanatory unless noted below. Corrections on the application form and exhibits must be initialed and dated. **DO NOT** use masking materials to make corrections. If a certificate is allowed, you will be requested to send a check payable to "Treasurer of the United States" in the amount of \$432 for issuance of the certificate. Certificates will be issued to owner, not licensee or agent.

Plant Variety Protection Office

Telephone: (301) 504-5518

FAX: (301) 504-5291

Homepage: <http://www.ams.usda.gov/science/pvpo/pvp.htm>

ITEM

- 18a. Give: (1) the genealogy, including public and commercial varieties, lines, or clones used, and the breeding method; (2) the details of subsequent stages of selection and multiplication; (3) evidence of uniformity and stability; and (4) the type and frequency of variants during reproduction and multiplication and state how these variants may be identified
- 18b. Give a summary of the variety's distinctness. Clearly state how this application variety may be distinguished from all other varieties in the same crop. If the new variety is most similar to one variety or a group of related varieties:
- (1) identify these varieties and state all differences objectively;
 - (2) attach statistical data for characters expressed numerically and demonstrate that these are clear differences; and
 - (3) submit, if helpful, seed and plant specimens or photographs (prints) of seed and plant comparisons which clearly indicate distinctness.
- 18c. Exhibit C forms are available from the PVPO Office for most crops; specify crop kind. Fill in Exhibit C (Objective Description of Variety) form as completely as possible to describe your variety.
- 18d. Optional additional characteristics and/or photographs. Describe any additional characteristics that cannot be accurately conveyed in Exhibit C. Use comparative varieties as is necessary to reveal more accurately the characteristics that are difficult to describe, such as plant habit, plant color, disease resistance, etc.
- 18e. Section 52(5) of the Act requires applicants to furnish a statement of the basis of the applicant's ownership. An Exhibit E form is available from the PVPO.
19. If "Yes" is specified (seed of this variety be sold by variety name only, as a class of certified seed), the applicant **MAY NOT** reverse this affirmative decision after the variety has been sold and so labeled, the decision published, or the certificate issued. However, if "No" has been specified, the applicant may change the choice. (See Regulations and Rules of Practice, Section 97.103).
22. See Sections 41, 42, and 43 of the Act and Section 97.5 of the regulations for eligibility requirements.
23. See Section 55 of the Act for instructions on claiming the benefit of an earlier filing date.

21. CONTINUED FROM FRONT (Please provide a statement as to the limitation and sequence of generations that may be certified.)

Varieties not included in seed certification program.

22. CONTINUED FROM FRONT (Please provide the date of first sale, disposition, transfer, or use for each country and the circumstances, if the variety (including any harvested material) or a hybrid produced from this variety has been sold, disposed of, transferred, or used in the U.S. or other countries.)

Transplants provided to Turner Seed, located in Breckenridge, TX, to allow for establishment to increase seed for future harvest. Turner seed funded the development and has first right of refusal on the crop. The date of first release is May 15, 2003 after submission of the original PVP application. To date, no seed has been sold or released to anyone else.

23. CONTINUED FROM FRONT (Please give the country, date of filing or issuance, and assigned reference number, if the variety or any component of the variety is protected by intellectual property right (Plant Breeder's Right or Patent).)

None. PVP requested only for U.S.

NOTES: It is the responsibility of the applicant/owner to keep the PVPO informed of any changes of address or change of ownership or assignment or owner's representative during the life of the application/certificate. There is no charge for filing a change of address. The fee for filing a change of ownership or assignment or any modification of owner's name is specified in Section 97.175 of the regulations. (See Section 101 of the Act, and Sections 97.130, 97.131, 97.175(h) of the Regulations and Rules of Practice.)

To avoid conflict with other variety names in use, the applicant must check the appropriate recognized authority. For example, for agricultural and vegetable crops, contact: Seed Branch, AMS, USDA, Room 213, Building 306, Beltsville Agricultural Research Center—East, Beltsville, MD 20705. Telephone: (301) 504-8089. <http://www.ams.usda.gov/lsg/seed.htm>

According to the Paperwork Reduction Act of 1995, an agency may not conduct or sponsor, and a person is not required to respond to a collection of information unless it displays a valid OMB control number. The valid OMB control number for this information collection is 0551-0055. The time required to complete this information collection is estimated to average 3.0 hours per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information.

The U.S. Department of Agriculture (USDA) prohibits discrimination in all its programs and activities on the basis of race, color, national origin, gender, religion, age, disability, sexual orientation, marital or family status, political beliefs, parental status, or protected genetic information. (Not all prohibited bases apply to all programs.) Persons with disabilities who require alternative means for communication of program information (Braille, large print, audiotape, etc.) should contact USDA's TARGET Center at 202-720-2600 (voice and TDD).

To file a complaint of discrimination, write USDA, Director, Office of Civil Rights, Room 326-W, Whitten Building, 14th and Independence Avenue, SW, Washington, DC 20250-6410 or call 202-720-6354 (voice and TDD). USDA is an equal opportunity provider and employer.

SI-470 (02-10-2003) designed by the Plant Variety Protection Office with Voice 2000. Replaces former versions of SI-470, which are obsolete.

DRAFT Exhibit A Form

1. Describe the genealogy (back to and including public and commercial varieties, lines, or clones used) and the breeding method(s).

During the summers of 1996-1997, 26 native seed accessions of Blackfoot Daisy were collected from the Cross Timber and Prairies, South Texas Plains, Edwards Plateau and Rolling Plains vegetational regions of Texas. Plant populations collected were selected for compact growth habit and uniform appearance. The 26 accessions were seeded in a greenhouse and transplanted into field plots in Lubbock, Texas to where they were open pollinated and the seed collected for further evaluation.

(continued on next page)

2. Give the details of subsequent stages of selection and multiplication:

Year	Detail of Stage	Selection Criteria
1996	Collected 11 accessions of Blackfoot Daisy and designated them BD-1, BD-2, BD-3, BD-4, BD-5, BD-6, BD-7, BD-8, BD-9, BD-10, and BD-11. BD-1 was collected in Stephens County, TX on May 19, 1996. BD-2 was collected in Mason, TX on May 15, 1996. BD-3 was collected between Hext and Menard, TX on May 15, 1996. BD-4, BD-5, and BD-6 were collected in Carson City, TX on May 15, 1996. BD-7 was collected on Texas on Hwy 125 at the 52.4 mile marker on May 15, 1996. BD-8 was collected in Seminole on May 8, 1996. BD-9 was collected in Dickens, TX on August 2, 1996. BD-10 and BD-11 were collected in Seminole on May 8, 1996.	Compact habit, uniform appearance, floral density, survivability, and petals characteristics.

3a. Is the variety uniform? ☒ Yes ☐ No

How did you test for uniformity?

The variety is uniform. Each season the hybrid selection has been grown, the plant has retained a uniform and compact growth habit along with a distinctive reflex petal shape. Those plants that seem to be inferior were roughed during the years of selection. Once the plant became stable, we began the comparison studies.

3b. Is the variety stable? ☒ Yes ☐ No

How did you test for stability? Over how many generations?

The variety is stable. During the field trials from 1997-2004, the 7 generations have had no discernable visual change in appearance. The compact habit and reflexed petals have remained characteristic.

4. Are genetic variants observed or expected during reproduction and multiplication? ☐ Yes ☒ No

If yes, state how these variants may be identified, their type and frequency

Continue on additional pages if necessary.

DRAFT A Exhibit A Form Continued

1. Describe the genealogy.

In 1998, the accessions were seeded in a greenhouse and transplanted into field plots in Lubbock, Texas following a randomization pattern to enhance the impact of open pollinization. Seed was collected from each of the accessions and carried forward to the next year. The accessions were again planted out and TTU-19 was determined to have the best appearance. Seed of TTU-19 was collected from the best plants in that accession and carried through for the next year. This process was repeated over several years until a stable line was created. Comparison tests were made with a selection sold by Plants of the Southwest.

MS
1/20/06
Raider White

~~'Plains'~~ Blackfoot Daisy exhibits a plant height at maturity of 20-25cm with a spread of 60-70cm. The perennial subshrub is composed of multiple branches forming a dense crown covered with 150-300 composite flowers that are 21-22mm in diameter. Each floral head has 8 white ray flowers with 3 teeth on the outer margin and subtended by a small foot-shaped bract. These petals surround a tight mound of yellow disk flowers. 'Plains' blooms from late spring until frost. The attractive foliage provides interest when the plant is out of bloom. The linear leaves have opposite leaf attachment and are covered with strigulose hairs on both surfaces. The foliage is light green with an entire margin. The mature fruit is composed of inner phyllaries that surround the achene of the rayflower and develop into a hood-like attachment. This structure remains attached to the seed at maturity. The seeds are dark brown with the attached structure a brown color. The average 1000 seed weight is 3.12g.

2. Give the details of subsequent stages of selection and multiplication.

1997

The 11 accessions were grown in field plots, evaluated for performance and the top two accessions (BD-7 and BD-9) were taken forward in the study. 15 more accessions were collected. T-5 was collected in Post, TX on May 8, 1997. T-10 was collected on Highway 125 west of Lubbock, TX on May 8, 1997. T-19 was collected on Highway 380 east of Post, TX (GPS: R051620A). T-40 was collected on Hwy 1623 by June, TX (GPS: R051921C) on July 9, 1997. T-42 was collected on Hwy 87 north of Fredericksburg, TX (GPS: R052014A) on July 10, 1997. V-15 was collected on Hwy 651 north of Post, TX (GPS: R050914A) on July 7, 1997. V-28 was collected on Hwy 214 south of Plains, TX (GPS: R051216B) on July 7, 1997. V-30 was collected on Hwy 214 north of Seminole, TX (GPS: R051217C) on July 7, 1997. V-34 was collected on Hwy 380, east of Post, TX (GPS: R051618C) on July 7, 1997. V-41 was collected on Hwy 281 outside Hico, TX (GPS: R051819C) on July 8, 1997. V-44 was collected on Hwy 281 just before 380 mile marker (GPS: R051821B) on July 8, 1997. V-52 was collected on Hwy 473 west of Hwy 281 (GPS: R051922A) on July 9, 1997.

V-53 was collected on Hwy 473 west of Jacob's Creek, TX (GPS: R051922B) on July 9, 1997. V-59 was collected on Hwy 29 roadcut past Sleepy Hollow (GPS: R052017B) on July 7, 1997. V-64 was collected on Hwy 158 (GPS: R052021A) on July 10, 1997.

1998

The 17 accessions were field grown and evaluated for performance. BD-7 and BD-9 were again rated highly along with the 1997 addition of T-19. These 3 accessions were continued.

1999

BD-7, BD-9, and T-19 were field grown and evaluated. T-19 was determined to be superior and rogued and increased.

2000 – 2001

T-19 grown in Lubbock, TX and Dallas, TX along with the commercial release of Plants of the Southwest – Blackfoot Daisy. Comparison data was taken.

2002

T-19 rogued and increased Dallas, TX and Lubbock, TX.

2003 – 2004

In Dallas, TX comparison field trials were conducted and final data obtained.

b. accession identification		
Identifying Code	Collection Site	Collection Date
BD-1	Hubbard Creek Lake, Stephens County, TX	May 19, 1996
BD-2	10 mi. north of Mason, TX	May 15, 1996
BD-3	Hwy. 29 between Hext and Menard, TX	May 15, 1996
BD-4	Colorado City, TX	May 15, 1996
BD-5	Colorado City, TX	May 15, 1996
BD-6	Colorado City, TX	May 15, 1996
BD-7	Hwy 125 at the 52.4mile marker	May 15, 1996
BD-8	Seminole, TX between Hwy 214 and Hwy 385	May 8, 1996
BD-9	Hwy 114 just past Dickens, TX	August 2, 1996
BD-10	Seminole, TX between Hwy 214 and Hwy 385	May 8, 1996
BD-11	Seminole, TX between Hwy 214 and Hwy 385	May 8, 1996
T-5	Hwy 651 north of Post, TX (GPS: R050915A)	May 8, 1997
T-10	Hwy 125 west of Lubbock, TX (GPS: R051215B)	May 8, 1997
T-19	Hwy 380 east of Post, TX (GPS: R051620A)	May 8, 1997
T-40	Hwy 1623 by June, TX (GPS: R051921C)	July 9, 1997
T-42	Hwy 87 north of Fredericksburg, TX (GPS: R052014A)	July 10, 1997
V-15	Hwy 651 north of Post, TX (GPS: R050914A)	July 7, 1997

V-28	Hwy 214 south of Plains, TX (GPS: R051216B)	July 7, 1997
V-30	Hwy 214 north of Seminole, TX (GPS: R051217C)	July 7, 1997
V-34	Hwy 380, east of Post, TX (GPS: R051618C)	July 7, 1997
V-41	Hwy 281 outside Hico, TX (GPS: R051819C)	July 8, 1997
V-44	Hwy 281 just before 380 mile marker (GPS: R051821B)	July 8, 1997
V-59	Hwy 29 roadcut past Sleepy Hollow (GPS: R052017B)	July 10, 1997
V-64	Hwy 158 (GPS: R052021A)	July 10, 1997
V-52	Hwy 473 west of Hwy 281 (GPS: R051922A)	July 9, 1997
V-53	Hwy 473 west of Jacob's Creek, TX (GPS: R051922B)	July 9, 1997

DRAFT Exhibit B Form

Based on overall morphology, Texas Tech – Raider White is most similar to Plants of the Southwest- Blackfoot Daisy
Applicant's new variety *Most similar comparison variety(ies)*

Texas Tech – Raider White most clearly differs from Plants of the Southwest- Blackfoot Daisy in the following traits:
Applicant's new variety *Most similar comparison variety(ies)*
(Same one(s) named in the first sentence)

Name the specific trait, then list the value of that trait for each variety in the comparison. Attach appropriate supporting evidence (see the Guidelines for Presenting Evidence in Support of Variety Distinctness, available from the PVP Office or website)

1. Qualitative traits: (Eg. Leaf Pubescence) Ray flower presentation	Applicant's New Variety: <u>heavy pubescence</u> Ray flowers reflexed	1 st Comparison Variety: <u>glabrous</u> Ray flowers straight	Evidence: <u>photograph attached</u> Photograph Attached (Fig. 1)
2. Color traits: (Eg. Leaf Color) Dorsal leaf color Stigma color Anther color Sepal color	<u>Dark Green (5GY 3/4)</u> <u>Light Green (7.5 GY/5/4)</u> <u>Yellow (5Y/7/10)</u> <u>Brown (5YR/4/8)</u> <u>Light Green (5GY/7/8)</u>	<u>Light Green (2.5GY 8/10)</u> <u>Light Green (5 G/5/4)</u> <u>Yellow (5Y/8/8)</u> <u>Brown (7.5YR/4/4)</u> <u>Light Green (2.5GY/8/8)</u>	<u>Munsell Color Chart</u> <u>Munsell Color Chart</u>
3. Quantitative traits: (Eg. Plant Height) Number of Branches per Plant	<u>200 cm +/- 10 cm (N=25)</u> <u>14.600 +/- 1.055 (N=15)</u>	<u>250 cm +/- 15 cm (N=25)</u> <u>8.400 +/- 0.584 (N=15)</u>	<u>statistics attached</u> Statistics Attached
4. Other: Number of flowers per Plant	<u>248.333 +/- 15.527 (N=15)</u>	<u>162.867 +/- 13.974 (N=15)</u>	Statistics attached

Use additional tables to present clear differences for additional comparison varieties. Use additional pages to present supporting evidence.

Statistical Analysis Report

Trial # 1, 2003

Variety Name	Trait	Mean	Standard Deviation of the Mean	Sample Size	Specific Statistical Analysis Used	Actual Statistic	Probability Value
TTU-PV1	Inflor Width	3.620 cm	0.246	15	1-way AOV	F=37.009	P ≤ 0.000
PSW Prairie	Inflor Width	3.067 cm	0.253	15			
Verbena							
TTU-PV1	Leaf Width	3.601 cm	0.517	15	1-way AOV	F=6.220	P ≤ 0.000
PSW Prairie	Leaf Width	3.214 cm	0.307	15			
Verbena							
Trial Information (date, place, treatment, weather conditions, etc.):		3/2003 through 9/2003; Texas A&M Research and Extension Center in Dallas, Texas; Open pollination crosses; Field Plots; Clay soil					
Evidence of Appropriateness of Analysis:		Data is homoskedastic per the Kolmogorov Smirnov Z test; One-way ANOVA used for analysis					
Evidence that Pooling data was appropriate (if done):		Data was not pooled					
If different treatments, # Sites, # Plots per Site, # Plants per Plot:		1 site each year, 3 blocks per site, 5 plants per block					

Raider White

Raider White

Statistical Analysis Report

Trial # 1, 2004

Variety Name	Trait	Mean	Standard Deviation of the Mean	Sample Size	Specific Statistical Analysis Used	Actual Statistic	Probability Value
TTU-PV1	Inflor Width	3.520 cm	0.291	15	1-way AOV	F=7.238	P ≤ 0.012
PSW Prairie	Inflor Width	3.236 cm	0.287	15			
Verbena							
TTU-PV1	Leaf Width	4.61 cm	0.541	15	1-way AOV	F=8.429	P ≤ 0.007
PSW Prairie	Leaf Width	3.87 cm	0.821	15			
Verbena							
Trial Information (date, place, treatment, weather conditions, etc.):		3/2004 through 9/2004; Texas A&M Research and Extension Center in Dallas, Texas; Open pollination crosses; Field Plots; Clay soil					
Evidence of Appropriateness of Analysis:		Data is homoskedastic per the Kolmogorov Smirnov Z test; One-way ANOVA used for analysis					
Evidence that Pooling data was appropriate (if done):		Data was not pooled					
If different treatments, # Sites, # Plots per Site, # Plants per Plot:		1 site each year, 3 blocks per site, 5 plants per block					

Raider White

Raider White

Comments (Attach Photographic prints: Continue in Exhibit D).

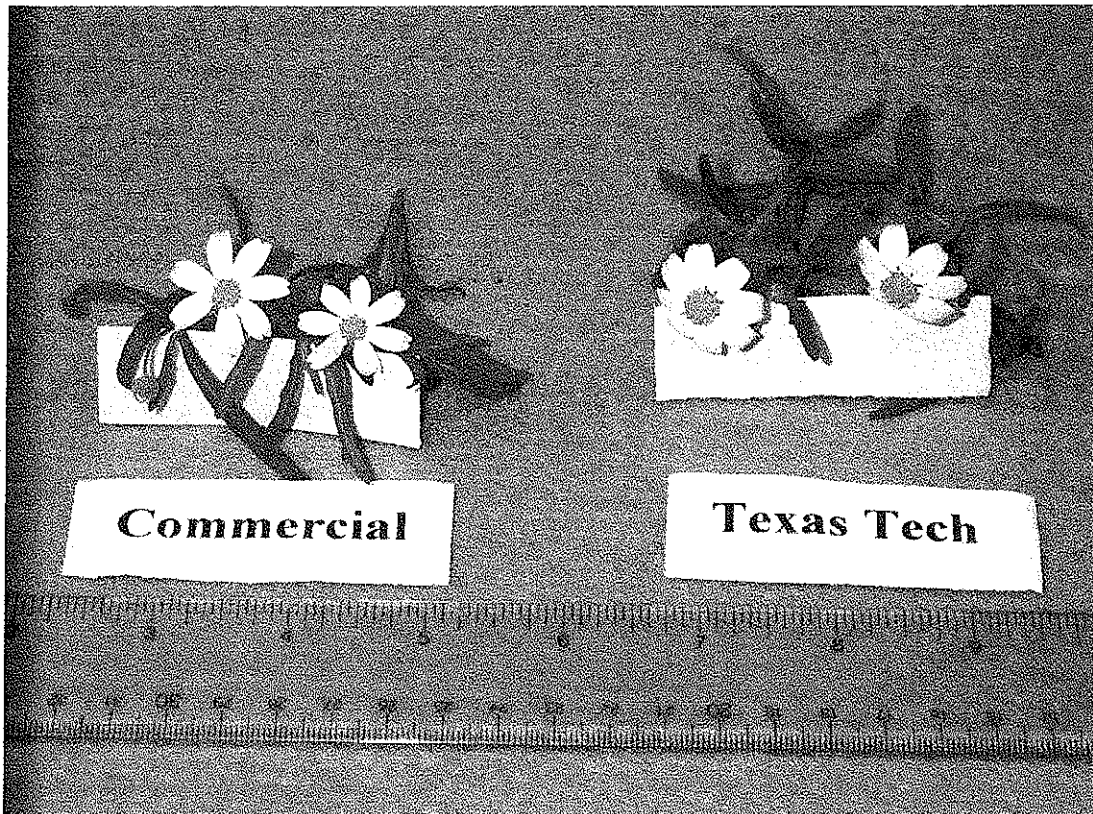


Fig. 1 Plants of the Southwest Blackfoot Daisy with a straight rayflower.
Texas Tech Plains Blackfoot Daisy (TTU-T19) with a reflexed rayflower.

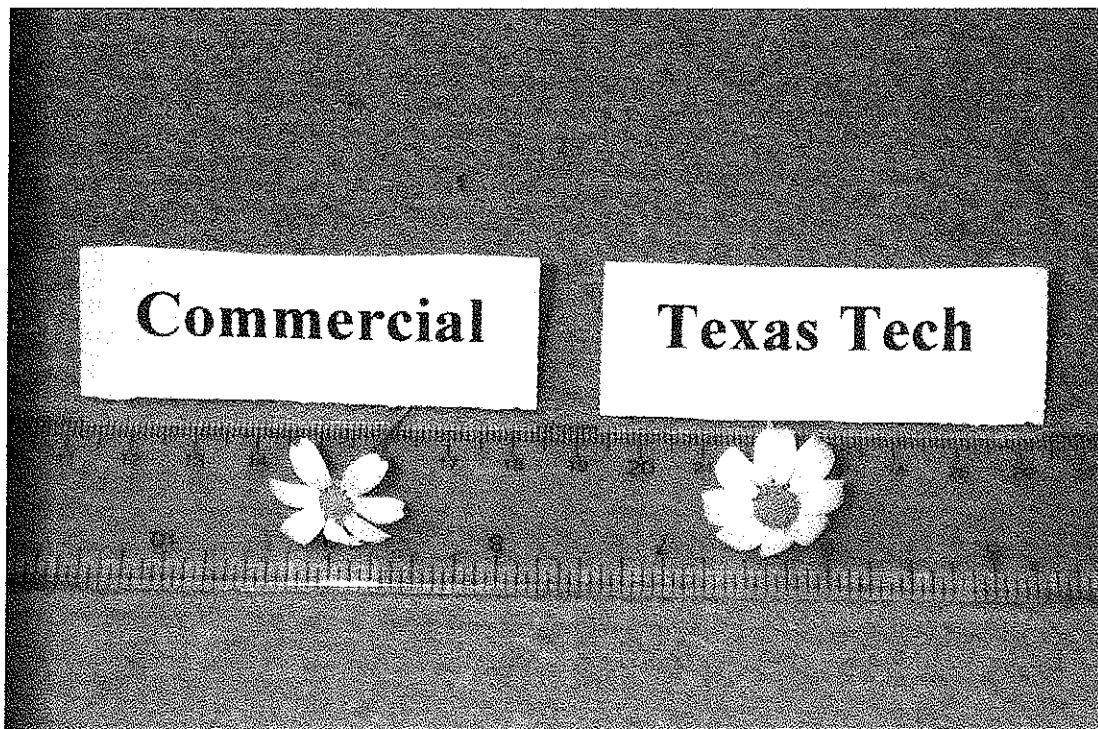


Fig. 2 Plants of the Southwest -Blackfoot Daisy with smaller diameter rayflower.
Texas Tech - Plains Blackfoot Daisy with a larger diameter rayflower.

JMS
1/20/06

Raider White



Fig. 3 Texas Tech - Plains Blackfoot Daisy (TTU-T19)

Raider White



Fig. 4 Plants of the Southwest - Blackfoot Daisy

JMS
1/20/06



Fig. 3 Texas Tech - Plains Blackfoot Daisy (TTU-T19)
Ranier White



Fig. 3 Plants of the Southwest - Blackfoot Daisy

SMS
1/20/06

United States Department of Agriculture, Agricultural Marketing Service
Science and Technology, Plant Variety Protection Office
National Agricultural Library Building, Room 500
Beltsville, MD 20705

OBJECTIVE DESCRIPTION OF VARIETY
General Form for Any Species

Name of Applicant(s) Cynthia McKenney, Dick Auld, Sandra Balch, Cindy Murphy, Victor Hegemann	Variety Seed Source TTU-T19	Variety Name or Temporary Designation 'Plains' <i>Raider White</i>
Address (Street & No., or R.F.D. No., City, State, Zip Code and Country) Department of Plant and Soil Science Texas Tech University Lubbock, TX 79409-2122		FOR OFFICIAL USE PVPO Number 2003 00276
This is a general form for use when a form for a specific genus and species is not available. Applications of this type are made in species in which few varieties, if any, are commonly known. For that reason, a form cannot be drafted as the span of the variation of most characteristics is not known. In this case, the varieties are described according to the classical Linnaean way. Using a dictionary of botanical terms and this form, describe the characteristics of the application variety on the left side of the form and describe the most similar comparison variety on the right side of the form. Be as specific as possible. Include photographic prints of the varieties.		

1. QUALITATIVE TRAITS:

Crop Kind (Common Name): <u>Blackfoot Daisy</u>	Name of Comparison: <u>Blackfoot Daisy</u>
Genus and Species: <u>Melampodium leucanthum (Torr & Gray)</u>	Plants of the Source of Comparison: <u>Southwest</u>
Location Where Developed: <u>Texas Tech University, Lubbock, TX</u>	
Preferred Growing Conditions (light, moisture, soil type, pot/bedding/ground cover, etc.) Full sun with 15-30 inches of rainfall. Prefers calcareous soils with exposed gravel. Useful as a blooming perennial subshrub.	Growing Conditions Same
Propagation Method (seed/tuber/cuttings/etc.; inbred/hybrid/open pollinated/etc.; annual/perennial/etc.): Seed grown perennial that was collected with 25 other accessions. All were grown in open pollinated plots for multiple years. This accession chosen for its distinctive morphological features. No seed treatments used.	Propagation Method Seed grown perennial purchased from the company.
WHOLE PLANT HABIT (herbaceous/woody; upright/prostrate; thorns; tendrils; etc.): Semiwoody subshrub with an upright, mounding character; herbaceous to semi-woody depending on the age of the growth.	Plant Habit Same
LEAF SHAPE (simple/compound; arrangement on stem; whole leaf shape; leaf margin; leaf base; leaf apex; leaf attachment; leaf venation; pubescence; waxiness; glands; fragrance; etc.): Simple, entire leaves which are sessile and linear; opposite leaf attachment. Strigillose on both surfaces with some exudates.	Leaf Shape Same
FLOWERS (inflorescence type; floret shape; bud; sepals; petals; stigma; stamen; pollen; etc.): White flowered, solitary composite head, each ray subtended by a small foot-shaped bract. Ray flowers are distillate and fertile. Disk flowers have yellow corollas and are staminate. Petals have three teeth. Ray flowers are slightly reflexed towards the stem.	Flowers: Same except ray flowers are not reflexed toward the stem.
FRUITS (type; surface features; attachment; seeds; etc.): Achene: inner phyllaries surround an achene of a ray flowers and expand into a hood-like projection that rises above the achene.	Fruits and Seeds Same

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2. QUANTITATIVE TRAITS:

	Trait	Average (Mean)	Standard Deviation	Sample Size	Trait	Average (Mean)	Standard Deviation	Sample Size
NATURALITY	Number of Chromosomes (1N)	---			Number of Chromosomes (1N)	---		
	Days from emergence to first flower	---			Days from emergence to first flower	---		
	Days from emergence to 50% of plants in flower	---			Days from emergence to 50% of plants in flower	---		
	Days from first flower to last flower	---			Days from first flower to last flower	---		
	Days from transplant to first flower	---			Days from transplant to first flower	---		
	Days from transplant to 50% of plants in flower	---			Days from transplant to 50% of plants in flower	---		
	Days from first flower to last flower	---			Days from first flower to last flower	---		
	Days from emergence to first flower	---			Days from emergence to first flower	---		
	Days from emergence to 50% of plants in flower	---			Days from emergence to 50% of plants in flower	---		
	Days from first flower to last flower	---			Days from first flower to last flower	---		
	mm Plant Height at Maturity	224.6	3.09	12	mm Plant Height at Maturity	227.7	3.11	12
	mm Plant Width (Spread) at Maturity	66.18	4.32	12	mm Plant Width (Spread) at Maturity	61.10	5.85	12
PLANT	Number of Stems Arising from Base of Plant	1	0	15	Number of Stems Arising from Base of Plant	1	0	15
	mm Main Stem Length	300.9	4.32	12	mm Main Stem Length	305.5	5.85	12
	mm Main Stem Diameter at Mid-point	.81	.16	12	mm Main Stem Diameter at Mid-point	.58	.19	12
	Number of Branches (arising from lower half of main stem)	5.82	1.056	15	Number of Branches (arising from lower half of main stem)	4.79	1.189	15
	Branch Angle from Main Stem	70.2	7.660	15	Branch Angle from Main Stem	58.726	13.71	15
	Leaf Angle from Main Stem	63.86	8.069	15	Leaf Angle from Main Stem	48.43	8.373	15
	mm Width of Leaf	6.578	.141	15	mm Width of Leaf	3.527	.046	15
	mm Length of Leaf including Petiole	37.82	.601	15	mm Length of Leaf including Petiole	39.72	.209	15
	mm Thickness of Leaf	.50	.008	15	mm Thickness of Leaf	.113	.013	15
	mm Length of Petiole	---			mm Length of Petiole	---		
	mm Width of Leaflet	---			mm Width of Leaflet	---		
	mm Length of Leaflet	---			mm Length of Leaflet	---		
INFLORESCENCE	mm Inflorescence Height from Ground	259.2	3.18	15	mm Inflorescence Height from Ground	263.5	3.27	15
	mm Inflorescence Width (Diameter)	21.8	.12	15	mm Inflorescence Width (Diameter)	22.8	.38	15
	mm Depth of Head or Inflorescence	8.8	.15	15	mm Depth of Head or Inflorescence	7.6	.17	15
	Number of Florets Per Inflorescence				Number of Florets Per Inflorescence	---		
	mm Length of Peduncle				mm Length of Peduncle	---		

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INDIVIDUAL FLOWER	Number of Sepals per Floret	-- 5	0	15	Number of Sepals per Floret	-- 4.87	.34	15
	Number of Petals per Floret	-- 8.40	0.83	15	Number of Petals per Floret	-- 7.58	.49	15
	Number of Anthers per Floret	--			Number of Anthers per Floret	--		
	Number of Stigmas per Floret	--			Number of Stigmas per Floret	--		
	mm Floret Diameter	--			mm Floret Diameter	--		
	mm Eye Diameter	--			mm Eye Diameter	--		
	mm Petal Length (ray flower if Composite)	9.36	.79	15	mm Petal Length (ray flower if Composite)	14.05	.98	15
	mm Petal Width (ray flower if Composite)	6.46	.83	15	mm Petal Width (ray flower if Composite)	6.156	.78	15
	mm Disk Flower Length (Composite only)	2.16	.17	15	mm Disk Flower Length (Composite only)	1.32	.29	15
	mm Disk Flower Width (Composite only)	1.78	.20	15	mm Disk Flower Width (Composite only)	1.83	.25	15
	mm Sepal Length	6.75	.32	15	mm Sepal Length	5.80	.59	15
	mm Sepal Width	4.28	.42	15	mm Sepal Width	3.51	.48	15
INDIVIDUAL FRUIT	mm Fruit Length	--			mm Fruit Length	--		
	mm Fruit Width	--			mm Fruit Width	--		
	mm Fruit Thickness	--			mm Fruit Thickness	--		
	gm Fruit Weight	--			gm Fruit Weight	--		
	mm Fruit Rind or Skin Thickness	--			mm Fruit Rind or Skin Thickness	--		
	mm Fruit Flesh Thickness	--			mm Fruit Flesh Thickness	--		
	Number of Locules (Cavities) per Fruit	--			Number of Locules (Cavities) per Fruit	--		
	mm Cavity Width	--			mm Cavity Width	--		
	mm Cavity Length	--			mm Cavity Length	--		
	Number of Seeds per Fruit	--			Number of Seeds per Fruit	--		
SEEDS	mg Weight per 1000 Seeds	--			mg Weight per 1000 Seeds	--		
	mm Seed Length	5.23	.30	15	mm Seed Length	4.58	.46	15
	mm Seed Width	3.70	.48	15	mm Seed Width	3.42	.40	15
	mm Seed Thickness	1.84	.25	15	mm Seed Thickness	1.60	.22	15
OTHER	Number of flowers per plant	235	76.9	12	Number of flowers per plant	151	71.6	12

3. PLANT COLORS:

	Color Verbal Name	Color Chart Code	Name of Color Chart		Color Name	Color Chart Code	Color Chart Name
EXAMPLE	Light Blue	106C	RHS				
Hypocotyl Color				Hypocotyl Color			
Cotyledon Color				Cotyledon Color			
Brace Root Color				Brace Root Color			
Main Stem Color, Mature	Brown	2.5Y/5/4	Munsell	Main Stem Color, Mature	Brown	2.5Y/6/4	Munsell
Leaf or Leaflet Color, Dorsal	Light Green	7.5GY/5/4	Munsell	Leaf Color, Dorsal	Light Green	5G/5/4	Munsell
Leaf or Leaflet Color, Ventral	Light Green	7.5GY/6/4	Munsell	Leaf Color, Ventral	Light Green	7.5GY/5/4	Munsell
Leaf or Leaflet Venation Color	Light Green	7.5GY/6/4	Munsell	Leaf or Leaflet Venation Color	Light Green	7.5GY/5/4	Munsell
Leaf Color, Other (describe location or placement)				Leaf Color, Other			
Petiole Color				Petiole Color			
Tendrill Color				Tendrill Color			
Thorn Color				Thorn Color			
Bud (Unopened Flower) Color	Light Green	7.5GY/7/4	Munsell	Bud (Unopened Flower) Color	Light Green	7.5GY 7/2	Munsell
Stigma Color	Yellow	5Y/7/10	Munsell	Stigma Color	Yellow	5Y 8/8	Munsell
Style Color				Style Color			
Ovary (Immature Fruit) Color				Ovary (Immature Fruit) Color			
Pollen Color	Yellow	5Y/8/12	Munsell	Pollen Color	Yellow	5Y/8/10	Munsell
Anther Color	Brown	5YR/4/8	Munsell	Anther Color	Brown	7.5YR/4/4	Munsell
Filament Color				Filament Color			
Petal Color, Main	White	10/	Munsell	Petal Color, Main	White	10/	Munsell
Petal Color, Edges (Picotee)				Petal Color, Edges (Picotee)			
Petal Color, Blotches				Petal Color, Blotches			
Petal Color, Streaks				Petal Color, Streaks			
Petal Color, Spots				Petal Color, Spots			
Petal Color, Veins	Light Green	2.5GY/8/6	Munsell	Petal Color, Veins	Light Green	2.5GY/8/3	Munsell
Petal Color, Eye				Petal Color, Eye			
Petal Color, Throat				Petal Color, Throat			
Petal Color, Disk Flowers (Compositae only)	Yellow	5Y/8/12	Munsell	Petal Color, Disk Flowers (Compositae only)	Munsell- Yellow	Munsell- 5Y 8/10	Munsell

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Floral Color, Other (describe location or placement)				Floral Color, Other (describe location or placement)			
Sepal Color	Light Green	5GY/7/8	Munsell	Sepal Color	Light Green	2.5GY/7/8	Munsell
Mature Fruit Color, Skin				Mature Fruit Color, Skin			
Mature Fruit Color, Flesh				Mature Fruit Color, Flesh			
Fruit Color, Other (describe location or placement)				Fruit Color, Other			
Seed Coat Color	Dark Brown	5YR/3/2	Munsell	Seed Coat Color	Dark Brown	5YR/3/2	Munsell
Seed Embryo Color	Cream	2.5Y/8/2	Munsell	Seed Embryo Color	Cream	2.5Y/8/4	Munsell
Seed Structure Color, Other (describe location or placement) <i>Achene of ray flower develops a hood</i>	Brown	7.5YR/4/4	Munsell	Seed Structure Color, Other	Brown	7.5YR/4/2	Munsell
Note: Common Color Charts: RHS-Royal Horticultural Society Colour Chart Munsell-Munsell Book of Color HCC-Horticultural Colour Chart BCC-British Colour Council Dictionary of Colour Standards							

4. DISEASE, INSECT, and ENVIRONMENT RESISTANCE

(Rate from 1 (most susceptible) to 9 (most resistant)):

9	Powdery Mildew	9	Powdery Mildew
—	Other (specify) _____	—	Other (specify) _____
9	Aphids	9	Aphids
—	Other (specify) _____	—	Other (specify) _____
9	Heat	9	Heat
9	Cold	9	Cold
—	Lodging	—	Lodging
9	Wind	9	Wind
—	Other (specify) _____	—	Other (specify) _____

REFERENCES:

Bailey, L.H. 1971. Manual of Cultivated Plants. MacMillan, New York, N.Y.
 Hay, R., P. M. Synge. 1991. The Colour Dictionary of Garden Plants with House and Greenhouse Plants. Bloomsbury Books, London.
 Munsell Color Chart for Plant Tissues. Macbeth. P.O. Box 230, Newburgh, N.Y. 12551-0230
 The Wise Garden Encyclopedia. 1990. HarperCollins Publishers, New York, N.Y.

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9. INDICATE A VARIETY WHICH MOST CLOSELY RESEMBLES THE APPLICATION VARIETY FOR EACH CHARACTER LISTED:

CHARACTER	NAME OF VARIETY	CHARACTER	NAME OF VARIETY
LEAF SIZE	PSW-BLACK FOOT	PLANT HABIT	PSW-BLACK FOOT
LEAF SHAPE		PLANT VIGOR	"
LEAF MARGINS		STEM STOCKINESS	"
LEAF COLOR		STEM PUBESCENCE	"
FLOWER COLOR		SPIKE SHAPE	"

REFERENCES:

Bailey, L.H. 1971. Manual of Cultivated Plants. MacMillan. New York. N.Y.
 Hay, R. P. M. Synge. 1991. The Colour Dictionary of Garden Plants with House and Greenhouse Plants. Bloomsbury Books. London.
 Munsell Color Chart for Plant Tissues. Macbeth. P.O. Box 230. Newburgh, N.Y. 12551-0230
 The Wise Garden Encyclopedia. 1990. HarperCollins Publishers. New York. N.Y.

COMMENTS (Continue in Exhibit D):

SEE NEXT PAGE.
 HORT SCIENCE JUNE, 2004
 PUBLICATION

INSTRUCTIONS

Please read instructions carefully before completing the attached form. The Objective Description Form is a necessary part of an application for Plant Variety Protection (Breeder's Rights) in the United States of America. It is designed to guide the applicant in describing a plant variety in detail so that comparisons with other varieties may be done in a meaningful way. It is in the applicant's best interest to describe the application variety as completely as possible to establish an adequate variety description.

The applicant's name and complete address should be at the top of the form. The country should be included since it is needed when mailing to some areas. The name of the variety is also entered at the top of the form. The Plant Variety Protection Office will assign a unique PVP Number to each application and enter it below the variety name.

A list of color choices is given at the top of the form. The color choices are to be used, along with the color codes from the "Munsell Color Chart" or other published color chart, when describing a color trait of the variety.

Choose one variety to use as a comparison variety throughout the Objective Description Form. Describe the comparison variety in the right-hand column for all traits on form. The variety that you choose should be the most similar one in terms of background and morphology. It should be the same one used in the Exhibit 8 to describe the novelty of the application variety. The comparison variety should be grown in trials with the application variety for 2-3 location/years (environments) in the region of best adaptability. The varietal and environmental data collected should remain available for an additional 3 years to resolve any questions concerning comparisons or descriptions of varieties.

In general, measurements of quantitative traits should be taken on 15-25 randomly selected plants or plant parts to obtain averages and statistics that describe a typical planting of the variety. For each of the measurable traits, report the mean, the number of plants measured, and the standard deviation.

$$\text{Standard Deviation} = \sqrt{\frac{\sum (X - \bar{X})^2}{(N-1)}}$$

DISEASE AND INSECT REACTIONS: Test as many disease and insect reactions as possible BEFORE applying for protection. BEST: Test reactions for at least the 5 most common diseases or insects for the region in which the variety is best adapted. Many older varieties were tested extensively for disease and insect reactions. More complete information in these sections of the application may speed the determination of distinctness.

Comments (Attach Photographic prints: Continue in Exhibit D).

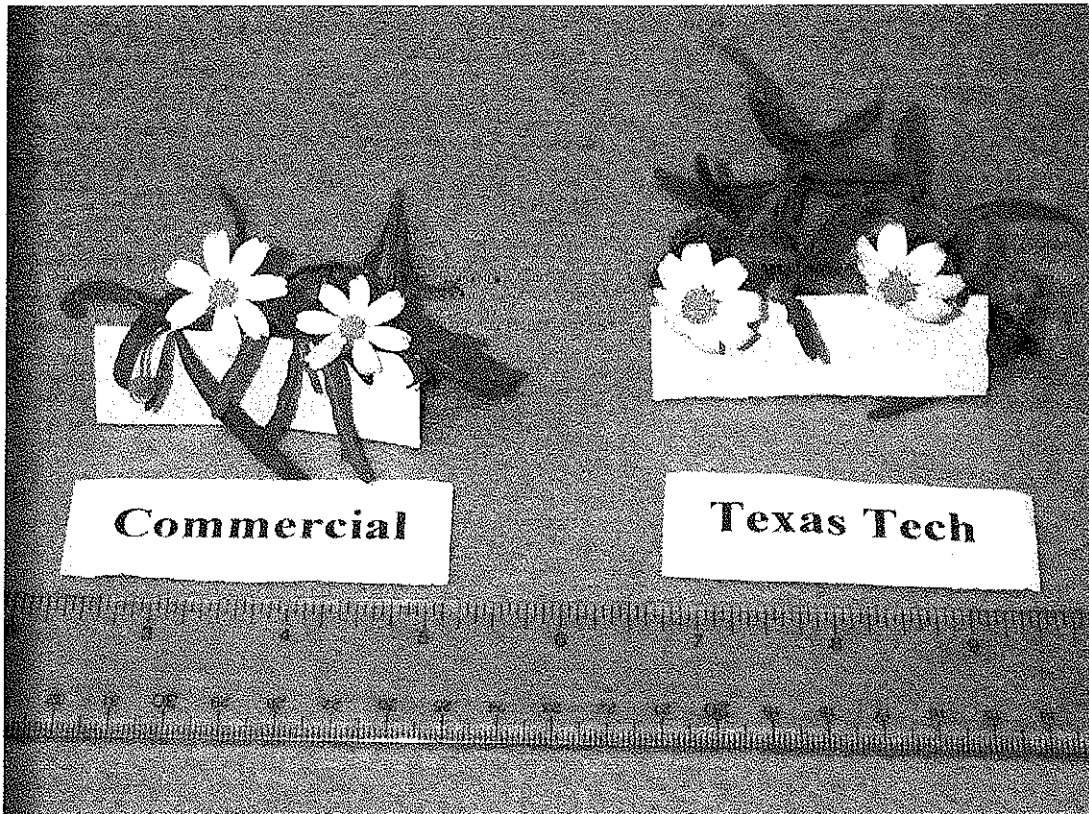


Fig. 1 Plants of the Southwest Blackfoot Daisy with a straight rayflower.
Texas Tech Plains Blackfoot Daisy (TTU-T19) with a reflexed rayflower.
Raider White

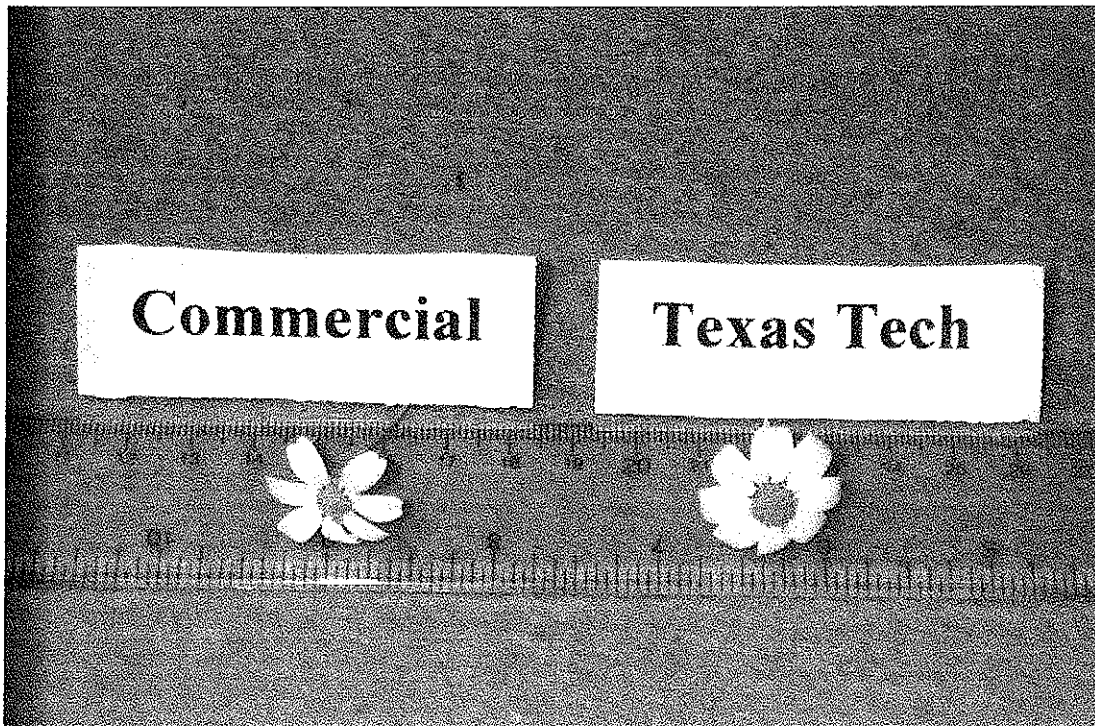


Fig. 2 Plants of the Southwest -Blackfoot Daisy with smaller diameter rayflower.
Texas Tech -Plains Blackfoot Daisy with a larger diameter rayflower.
Raider White

EXHIBIT D

Additional Description of TTU T19 - Raider White*Raider White*

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TTU-T19 is a unique variety of the wildflower *Melampodium leucanthum* (Torr & Gray) (Blackfoot Daisy). It has been selected for its reflexed flower form, broader petal width, (Fig. 1 and 2), more compact habit and more vigorous growth (Fig. 3 and 4).

TTU- T19 has a greater number of flowers per plant as well as having a greater number of branches per plant. This lends to the enhanced appearance of a more full and compact plant. The branch angle to the main stem and the leaf angle to the branch are also greater. These features also add to the full appearance of the plant.

Plant Release Submitted to HortScience Oct, 2002.

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1/20/06

Raider White

'Plains' Blackfoot Daisy (*Melampodium leucanthum*)**Cynthia B. McKenney¹***Department of Plant and Soil Science, Texas Tech University, Lubbock, TX 79409 and
Texas A&M University Research and Extension Center, Dallas TX 75252***Sandra A. Balch², Cynthia Murphy², Vronka Stoker², and Dick L. Auld³***Department of Plant and Soil Science, Texas Tech University, Lubbock, TX 79409*

Additional index words. Asteraceae, composite, drought tolerance, native plant,
wildflower

"Blackfoot Daisy" (*Melampodium leucanthum* Torr. & Gray) is a common wildflower native to much of Arizona, New Mexico, Texas, Oklahoma, Kansas and Colorado (Stuessy, 1972). This perennial subshrub is characterized by a tight mound of white composite flowers with golden centers and linear leaves. Correll and Johnston (1970) have identified that this attractive native plant flourishes in calcareous gravelly soils. Indigenous to regions receiving 40-70 cm of annual rainfall, Blackfoot Daisy is found along roadsides in the high plains, shortgrass prairies and uplands and on limestone outcroppings exhibiting disturbed soils (Borland, 1998). The long period of bloom and

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³Professor and Chair

tolerance to the heat and drought of its native environment make this plant desirable for use in water conserving landscapes. The unusual name "Blackfoot Daisy" is derived from the foot-shaped bract that surrounds the seed and turns black at maturity (Diggs et al., 1999).

M. leucanthum is found in both diploid and tetraploid populations that are indistinguishable from each other morphologically. Turner and King (1961) suggest the ploidy level does not appear to be influenced by geography or ecologic conditions. Populations of both ploidy levels have been found growing among each other.

In 1996, we initiated a breeding project to identify wildflowers with potential for landscape use in demanding environments. Accessions with outstanding attributes are collected and comparison trials conducted over a several seasons. ^{Raider White} 'Plains' Blackfoot Daisy is the first formal release from our program and has been developed through 6 years of recurrent phenotypic selection for increased branching, compact growth and greater floral density. The unique reflexed flower form is a distinguishing trait that helps to recognize 'Plains' Blackfoot.

Origin

Seed from 11 accessions exhibiting a compact growth habit and exceptional number of flowers was collected during the spring of 1996 from populations within the Cross

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Timbers and Prairies, Edwards Plateau, High Plains, and Rolling High Plains vegetational areas of Texas. These germplasm accessions were stored in a cooler and germinated the next spring under standard greenhouse conditions. Seedlings were transplanted into field plots at the Texas Tech University experimental farm in Lubbock, TX where the accessions were evaluated at full bloom for compact growth, uniformity in flowering and overall appearance. The top two accessions were carried forward to the next year and trialed in a similar manner with 15 more accessions collected during the spring of 1997. During the second year of evaluation, one of the new lines proved to be superior in all characteristics. Original seed of the superior line was planted in 1998. About 30% of the plants not having good stem strength, compact growth, or high density branching were rouged and the remaining population was open-pollinated. Seed from the resulting population was transplanted in 1999 and recurrent phenotypic selection was repeated with approximately 10% of the population removed. This process was continued in 2000 and 2001 with minimal off-type plants emerging. The resulting seed from this process is being released as ^{Raider White} 'Plains' Blackfoot Daisy.

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Description

'Plains' Blackfoot daisy exhibits a plant height at maturity of 20-25cm with a spread of 60-70cm. The perennial subshrub is composed of 20-35 branches forming a dense crown covered with 150-300 composite flowers that are 21-22mm in diameter. Each floral head has 8 white (10, Munsell Color Chart) (Munsell Color, 1977) ray flowers that are 8-10 mm long and 5-7mm wide with 3 teeth on the outer margin and subtended by a small

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 foot-shaped bract. These petals surround a tight mound of yellow disk flowers (5Y/8/12, *Raider White* Munsell Color Chart). 'Plains' blooms from late spring until frost. The attractive foliage provides interest when the plant is out of bloom. The linear leaves have opposite leaf attachment and are covered with strigulose hairs on both surfaces. The foliage is light green (7.5GY/5/4, Munsell Color Chart) with an entire margin, 5.5-6mm leaf width and 43-45mm leaf length. The mature fruit is composed of inner phyllaries that surround the achene of the rayflower and develop into a hood-like attachment. This structure remains attached to the seed at maturity. The seeds are dark brown (5YR/3/2, Munsell Color Chart) with the attached structure a brown color (7.5YR/4/4, Munsell Color Chart). 'Plains' seed is 5-5.5mm long and 3.25-4.25mm wide. The average 1000 seed weight is 3.12g.

Performance

During the 2000 and 2001 growing season, 'Plains' was evaluated compared to a commercially available common seed source. Four blocks with 5 replicates each were transplanted into unamended soil and given supplemental irrigation as necessary. Plant growth data was collected for both seasons. 'Plains' developed significantly more flowers, a greater number of branches and larger petals than the commercial variety (Table1). This increase in flower number and number of branches creates the appearance of a more compact growth habit (Fig. 1).

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Raider White

~~'Plains'~~ is recommended for use in water conserving landscape and in low maintenance plantings. Drainage is critical for this plant. In areas with heavy soils, raised beds would be desirable. Deep infrequent watering is the most efficient way to maintain 'Plains' once it is established in the landscape. 'Plains' blooms throughout much of the growing season with minimal care. Spent flowers drop easily so dead heading is not necessary; however, the plant responds to shearing if a more compact habit is desired. Seed germination drops dramatically after storing for over one year.

Availability

For availability of both experimental and commercial seed, contact the corresponding author, Department of Plant and Soil Science, Texas Tech University, Box 42007, Lubbock, TX 79409 (806/742-2837).

Literature Cited

- Borland, J. 1998. *Melampodium leucanthum*. Amer. Nurseryman, 188(2):118.
- Correll, D. S., and M. C. Johnston. 1970. *Manual of the vascular plants of Texas*. Texas Research Foundation, Renner, TX.
- Diggs, G. M., B. L. Lipscomb, and R. J. O'Kennon 1999. *Shinners & Mahler's illustrated flora of north central Texas*. Botanical Research Institute of Texas, Ft. Worth, TX.

- Munsell Color. 1977. Munsell color charts for plant tissues. Macbeth Division of Kollmorgen Instruments Corporation, New Windsor, New York.
- Stuessy, T. F. 1972. Revision of the genus *Melampodium* (Compositae: Heliantheae). *Rhodora* 74:1-35.
- Turner, B. L. and R. M. King. 1961. A cytotaxonomic survey of *Melampodium* (Compositae-Heliantheae). *Amer. J. of Bot.* 49:263-269.

Table 1. Comparison of a commercially available common *Melampodium leucanthum* *Raider White* and *Melampodium leucanthum* 'Plains' in field trials, Lubbock, TX.

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Germplasm Source	Petal width (mm)	No. of branches	No. of flowers
Common	5.40 (0.25) ^z	15.4 (0.52)	146 (19.59)
'Plains'	5.87 (0.19)	31.0 (0.32)	229 (18.33)
Significance	*	*	*

^zMeans represent separate measurements of 15 plants of each germplasm source.

Numbers within the parentheses are the SE about the mean.

*t-test significant, $P \leq 0.05$.

200300276

REPRODUCE LOCALLY. Include form number and edition date on all reproductions.

FORM APPROVED - OMB NO. 0581-0055

U.S. DEPARTMENT OF AGRICULTURE AGRICULTURAL MARKETING SERVICE EXHIBIT E STATEMENT OF THE BASIS OF OWNERSHIP		The following statements are made in accordance with the Privacy Act of 1974 (5 U.S.C. 552a) and the Paperwork Reduction Act (PRA) of 1995. Application is required in order to determine if a plant variety protection certificate is to be issued (7 U.S.C. 2421). Information is held confidential until certificate is issued (7 U.S.C. 2426).	
1. NAME OF APPLICANT(S) Texas Tech University		2. TEMPORARY DESIGNATION OR EXPERIMENTAL NUMBER TTU-T19	3. VARIETY NAME 'Plains' Raider White
4. ADDRESS (Street and No., or R.F.D. No., City, State, and ZIP, and Country) Director of Technology Transfer Box 42007 Texas Tech University Lubbock, TX 79409-2007		5. TELEPHONE (include area code) (806) 742-4105	6. FAX (include area code) (806) 742-4102
		7. PVPO NUMBER # 200300276, 'Plains'	
8. Does the applicant own all rights to the variety? Mark an "X" in appropriate block. If no, please explain. <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO			

9. Is the applicant (individual or company) a U.S. national or U.S. based company? If no, give name of country		<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO
10. Is the applicant the original owner? <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO If no, please answer one of the following:		
a. If original rights to variety were owned by individual(s), is (are) the original owner(s) a U.S. national(s)?		
<input type="checkbox"/> YES <input type="checkbox"/> NO If no, give name of country		
b. If original rights to variety were owned by a company(ies), is (are) the original owner(s) a U.S. based company?		
<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO If no, give name of country		

11. Additional explanation on ownership (if needed, use reverse for extra space):

Cynthia McKenney and Dick Auld are the original breeders of this release. Both are employed by Texas Tech University who is the Owner of this germplasm. Texas Tech University is a Texas State Supported Institution.

PLEASE NOTE:

Plant variety protection can be afforded only to owners (not licensees) who meet one of the following criteria:

1. If the rights to the variety are owned by the original breeder, that person must be a U.S. national, national of a UPOV member country, or national of a country which affords similar protection to nationals of the U.S. for the same genus and species.
2. If the rights to the variety are owned by the company which employed the original breeder(s), the company must be U.S. based, owned by nationals of a UPOV member country, or owned by nationals of a country which affords similar protection to nationals of the U.S. for the same genus and species.
3. If the applicant is an owner who is not the original owner, both the original owner and the applicant must meet one of the above criteria.

The original breeder/owner may be the individual or company who directed final breeding. See Section 41(a)(2) of the Plant Variety Protection Act for definition.

According to the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number. The valid OMB control number for this information collection is 0581-0055. The time required to complete this information collection is estimated to average 10 minutes per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information.

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To file a complaint, write the Secretary of Agriculture, U.S. Department of Agriculture, Washington, D.C. 20250, or call 1-800-245-6340 (voice) or (202) 720-1127 (TDD). USDA is an equal employment opportunity employer.

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